

**REMARKS****Claim Status**

Claims 10-12 and 15-19 are pending after entry of this paper. Claims 10, 12, 15, 16, 18, and 19 have been rejected. Claims 11 and 17 have been withdrawn. Applicants reserve the right to pursue a withdrawn claim in a divisional or continuing application.

Claims 12, 15, 18, 19 have been amended to provisionally delete the dependence from presently withdrawn claims 11 and 17.

No new matter has been introduced by these amendments. Reconsideration and withdrawal of the pending rejections in view of the above claim amendments and below remarks are respectfully requested.

**Response to Rejections under 35 U.S.C. §102**

Claims 10, 12, 15, 16, 18 and 19 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,896,918 to Yokomizo (“Yokomizo”). Specifically, the Patent Office contends that “Yokomizo teaches methods of using a mannobiose containing composition comprising blending the composition with a feed and feeding the feed to livestock or poultry to inhibit *Salmonella*.” (Office Action; pg. 3). The Patent Office further alleges that “the same preparation steps are used on the same identical source material [in the presently pending claims and Yokomizo], thus, the  $\beta$ -1,4-mannobiose containing composition is **inherent** to the disclosure of Yokomizo. Also the ranges of at least 10% by weight and at least 1% by weight, etc. are clearly disclosed because the ranges of the cited disclosure clearly overlap with the claimed amounts. The identical method steps are used by Yokomizo to carry out the methods and hence the claims are identical to the cited disclosure and are considered to be

anticipated by Yokomizo.” (Office Action; pg. 3; emphasis added). Applicants respectfully disagree.

As the Patent Office is well aware, on the subject of inherency M.P.E.P. § 2112 clearly states that in order

[t]o establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’

Contrary to the conclusion arrived in the Office Action, applicants respectfully assert that Yokomizo does not anticipate the claimed invention neither expressly, nor inherently. As an initial matter, applicants respectfully wish to draw the Patent Office’s attention to the fact that the claimed method uses a β-1,4-mannobiose-containing composition, where one of the important feature is that the amount of β-1,4-mannobiose is at least 3% by weight of the dry matter portion of the β-1,4-mannobiose-containing composition. Whereas, Yokomizo teaches a method for preparing a mannose-containing composition.

While, the Office Action states that “[t]he claims clearly read on the teachings of Yokomizo wherein the same preparation steps are used on the same identical source material” (Office Action; pg. 3), applicants respectfully assert that the presence of at least 3% by weight of β-1,4-mannobiose does not “flow from the teachings of the [Yokomizo]” (M.P.E.P. § 2112) and, therefore, the conclusion of inherency can not be established. In fact, applicants presented a detailed comparison between two methods and the obtained products in the present specification, which can clearly distinguish the claimed method from the method taught in Yokomizo.

For example, the specification as filed describes the enzyme, temperature condition, reaction time and so on for the method for preparing the  $\beta$ -1,4-mannobiose-containing composition of the present invention. (page 11, line 8 to page 12, line 18.) In particular,

as for the amount of enzyme and reaction time, there is no limitation as long as mannobiose to be produced is at least 10% by weight based on the mannan before the degradation, while it is preferable not to make the reaction time be longer than necessary because even when the enzyme having high mannanase (endo-type) activity is used, mannobiose is degraded since the enzyme usually has mannosidase (exo-type) activity as well. Meanwhile, reaction temperature preferably ranges from 40° to 65°C, but the higher it rises the more the activity of mannosidase enhances and the more the amount of production of mannose increases. Therefore, when it is desired to inhibit mannose production as well as to produce mannobiose in large amount, the reaction may be performed at 40° to 55°C, or more preferably at 45° to 53°C.

For instance, reaction for 3-36 hours using palm kernel meal (mannan content is approximately 36% by weight) as a material can produce approximately up to 6-17 parts by weight of  $\beta$ -1,4-mannobiose content based on 100 parts by weight of material, depending on type and amount of used enzyme and time to use enzyme. Among the  $\beta$ -1,4-mannobiose-containing compositions prepared by the method for producing a  $\beta$ -1,4-mannobiose-containing composition of the present invention, it is preferable for a feed additive and a feed when the  $\beta$ -1,4-mannobiose-containing compositions contain at least 3% by weight of  $\beta$ -1,4-mannobiose in term of dry matter, and it is more preferable when they contain 10% by weight or more of  $\beta$ -1,4-mannobiose in term of dry matter.

(page 10, lines 4 to 29.) Applicants wish to draw the Patent Office's attention to the following table summarizing the materials, reaction temperature, reaction time, product and its amounts obtained in Examples 1, 2, 6 and Comparative Examples 1 and 2 and the reproduced Table 1 of Yokomizo as provided in col. 4 and cited in the Office Action.

Summary of **Examples 1, 2, 6 and Comparative Examples 1 and 2**

	Material	Reaction temperature	Reaction time	$\beta$ -1,4-mannobiose (weight% vs each meal)	Mannose (weight% vs each meal)
Example 1	Palm kernel	60°C	12 hours	10.58 parts (11.5% in terms of dry matter)	1.44 parts
Example 2	Copra meal	60°C	12 hours	12.35 parts (12.9% in terms of dry matter)	1.36 parts
Example 6	Copra meal	50°C	22 hours	14.18 parts	1.17 parts
Comparative Example 1	Palm kernel	60°C	72 hours	2.57 parts (2.79% in terms of dry matter)	11.52 parts
Comparative Example 2	Copra meal	60°C	72 hours	0.64 parts	13.72 parts

**Table 1** of Yokomizo :

Reaction time	Amount of mannose produced (weight % vs each meal)	
	Palm kernel meal	Copra meal
24	12.52 (%)	10.49 (%)
48	18.24	13.59
72	19.93	13.68

As shown above, in the Examples of the invention, *i.e.*, Examples 1, 2, and 6,  $\beta$ -1,4-mannobiose is produced in large amounts (**10.58 to 14.18%**) and mannose is produced in small amounts (**1.17 to 1.44%**), while in the comparative examples, mannose is produced in large amounts (**11.52 to 13.72%**) and  $\beta$ -1,4-mannobiose is produced in small amounts (**0.64 to 2.57%**), which establishes a clear inverse correlation between the amount of  $\beta$ -1,4-mannobiose vs. the amount of mannose produced.

Yokomizo, on the other hand, teaches that mannose is produced in large amounts (**10.49 to 13.68%**). Since the objective evidence shows that the mannose content is very similar between the comparative examples (**11.52 to 13.72%**) and Yokomizo (**10.49 to 13.68%**), the content of  $\beta$ -1,4-mannobiose must also be very similar (**0.64 to 2.57%**), thus, clearly establishing that Yokomizo can not and does not teach the  $\beta$ -1,4-mannobiose inclusion of at least 3% by weight.

Furthermore, applicants respectfully submit that the important feature of the present invention is that the blended feed comprises the mixture of the above  $\beta$ -1,4-mannobiose-containing composition and a feed inhibits the colonization of salmonella in livestock and poultry. Applicants wish to draw the Examiner's attention to tables 3, 4, and 5 of the instant specification, which demonstrate that the present invention has effectively reduced salmonella as compared to the enzymatically-treated mannose-type palm kernel meal described in Comparative Example 1 or enzymatically-treated mannose-type copra meal described in Comparative Example 2.

Hence, for at least the above-mentioned reasons, applicants assert that the express, implicit or inherent disclosure of Yokomizo does not teach the  $\beta$ -1,4-mannobiose-containing composition of the present invention where the  $\beta$ -1,4-mannobiose content is at least 3% by weight of the dry matter portion of the composition. Furthermore, Yokomizo does not describe that the blended feed comprising the mixture of the  $\beta$ -1,4-mannobiose composition is used to inhibit salmonella colonization in livestock and poultry. Since "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference" (M.P.E.P. § 2131; emphasis added), applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. 102(b) rejections to the claims in view of the above-mentioned remarks.

#### Dependent Claims

The applicant has not independently addressed all of the rejections of the dependent claims. The applicant submits that for at least similar reasons as to why independent claims 10 and 17 from which all of the dependent claims 12, 15, 16, 18, and 19 depend are believed allowable as discussed *supra*, the dependent claims are also allowable. The applicant

however, reserves the right to address any individual rejections of the dependent claims and present independent bases for allowance for the dependent claims should such be necessary or appropriate.

Thus, applicant respectfully submits that the invention as recited in the claims as presented herein is allowable over the art of record, and respectfully request that the respective rejections be withdrawn.

### **CONCLUSION**

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application. Favorable action by the Examiner is earnestly solicited.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **50-4827**, Order No. 1004334.003US.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **50-4827**, Order No. 1004334.003US.

Respectfully submitted,  
Locke Lord Bissell & Liddell LLP

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By: /Serge Ilin-Schneider/  
Serge Ilin-Schneider, Ph.D.  
Registration No. 61,584

**Correspondence Address:**

Locke Lord Bissell & Liddell LLP  
3 World Financial Center  
New York, NY 10281-2101  
(212) 415-8600 Telephone  
(212) 303-2754 Facsimile